

WHAT IS CLAIMED IS:

1. A switch of a network for switching data comprising:

a ⁽¹⁴⁾ fabric for switching the data;

a ⁽¹⁵⁾ parity fabric;

a ⁽¹⁶⁾ connection mechanism connected to the ⁽¹⁴⁾ fabric for providing data to and from the fabric and connected to the ⁽¹⁵⁾ parity fabric for providing parity data to and from the parity fabric;

a first ⁽¹⁸⁾ port card which receives data at (a first rate) from the network or sends data at the first rate to the network, performs first parity calculations on the data received at the first port card, produces first parity data from the first parity calculations or sends data at the first rate to the network, the first port card connected to the ⁽¹⁶⁾ connection mechanism to send data to or receive the data from the ⁽¹⁴⁾ fabric at a connection rate and to send the first parity data to or receive the data from the ⁽¹⁵⁾ parity fabric at the connection rate; and

a second ⁽²⁰⁾ port card which receives data at (a second rate) from the network or sends data at the second rate to the network performs second parity calculations on the data received at the second port card, produces second parity data from the second parity calculations or sends data at the second rate to the network, the second port card connected to the ⁽¹⁶⁾ connection mechanism to send data to or receive the data from the ⁽¹⁴⁾ fabric at the connection rate and to send the second parity data to or receive the data from the ⁽¹⁵⁾ parity fabric at the connection rate, the second

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port card separating the data received at the second rate into streams of data that together equal the data received at the second port card that are sent concurrently at the connection rate to the fabric and combine the data streams received at the connection rate into data that is sent at the second rate to the network.

2. A switch as described in Claim 1 wherein the connection rate equals the first rate and the second rate is equal to N times the first rate, where N is an integer greater than or equal to 2, and there are N streams.

3. A switch as described in Claim 2 wherein the connection mechanism includes a backplane bus that connects the first port card and the second port card to the fabric.

4. A switch as described in Claim 3 wherein the first port card has a first striper which takes the first parity data it receives and sends it on the backplane bus as an OC48 data pipe to the parity fabric, and the second port card has a second striper which takes the second parity data it receives and sends it as an OC48 data pipe to the parity fabric.

5. A switch as described in Claim 4 wherein the first port card has a first unstriper which receives the first parity data from the parity fabric on an OC48 data pipe and the second port card has a second unstriper which receives the second parity data from the parity fabric on an OC48 data pipe.

6. A switch as described in Claim 5 wherein the (first and second striper) stripe the first and second parity data respectively, they receive on a 48 bit basis to the parity fabric.

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7. A switch as described in Claim 6 wherein the (first and second stripers) stripe the first and second parity data, respectively, so the first and second parity data does not exceed a 12 bit boundary.

8. A switch as described in Claim 7 wherein the parity fabric has an aggregator⁽³²⁾ which receives the first and second parity data from the first⁽²⁴⁾ and second stripers⁽²⁴⁾, respectively, and a separator⁽³⁴⁾ which sends parity data from the parity fabric to the first unstriper⁽²⁸⁾ and the second unstriper⁽³⁰⁾.

9. A method for switching data in a network comprising the steps of:

⁽¹⁸⁾ receiving data at a first rate from the network at a first port card of a switch;

⁽²⁰⁾ receiving data at a second rate from the network at a second port card of the switch;

performing parity calculations on the data at the first rate by the first port card to produce first parity data and on the data at the second rate by the second port card to produce second parity data;

sending the first parity data from the first port card to a parity fabric of the switch through a connection mechanism of the switch at a connection rate;

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⁽²⁰⁾ separating the data received at the second rate at the second port card into streams of data that together equal the data received at the second port card;

sending the second parity data from the second ⁽²⁰⁾ port card to the parity ⁽¹⁵⁾ fabric of the switch through the connection ⁽¹⁸⁾ mechanism of the switch at a connection rate; and

sending concurrently at the connection rate to the fabric from the second ⁽²⁰⁾ port card the streams of data along the connection ⁽¹⁹⁾ mechanism.

10. A method as described in Claim 9 wherein the connection rate equals the first rate and the second rate is equal to N times the first rate, where N is an integer greater than or equal to 2, and there are N streams.

11. A method as described in Claim 10 wherein the connection mechanism includes a backplane bus ⁽²²⁾ that connects the first ⁽¹⁸⁾ port card and the second ⁽²⁰⁾ port card to the fabric.

12. A method as described in Claim 11 wherein the first port card has a first ⁽²⁴⁾ striper and the second port card has a second ⁽²⁶⁾ striper, and wherein the sending data from the first port card step includes the step of sending the first parity data on the backplane ⁽²²⁾ bus with the first ⁽²⁴⁾ striper as an OC48 data pipe to the parity ⁽¹⁵⁾ fabric and the sending data from the second ⁽²⁰⁾ port card step includes the step of sending the second parity data on the backplane bus with the second ⁽²⁶⁾ striper as an OC48 data pipe to the parity ⁽¹⁵⁾ fabric.

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(21) 15. A method as described in Claim 14 wherein the first striper sending step includes the step of striping the first parity data to the parity fabric through the bus so the first parity data does not exceed a 12 bit boundary, and the second striper sending step includes the step of striping the second parity data to the parity fabric through the bus so the second parity data does not exceed a 12 bit boundary.